

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims**

Claims 1-30 (canceled).

Claim 31 (currently amended): A microscope objective, comprising:  
an optical fiber having:  
an incoupling end; and  
an outcoupling end;  
wherein the incoupling end is configured to receive illumination light and convey the illumination  
light to the outcoupling end, and the outcoupling end is mechanically attached to a portion of  
the microscope objective and disposed in a Fourier plane that is conjugate to a focal plane of  
the microscope objective.

Claim 32 (currently amended): The microscope objective as recited in claim 31 wherein the optical fiber is configured to deliver the illumination light for total internal reflection microscopy.

Claim 33 (withdrawn): The microscope objective as recited in claim 31 wherein the optical fiber is configured to couple illumination light directly into the microscope objective through the optical fiber.

Claim 34 (withdrawn): The microscope objective as recited in claim 31 wherein at least part of the optical fiber is mechanically attached to a portion of the microscope objective.

Claim 35 (withdrawn): The microscope objective as recited in claim 31 wherein the optical fiber has an outcoupling end disposed in a portion of the microscope objective.

Claim 36 (withdrawn): The microscope objective as recited in claim 35 wherein the

outcoupling end is disposed in a plane that is conjugate to a focal plane of the microscope objective.

Claim 37 (withdrawn): The microscope objective as recited in claim 36 wherein the plane is a Fourier plane.

Claim 38 (withdrawn): The microscope objective as recited in claim 36 wherein the plane is a plane, closest to a front lens of the microscope objective, that is conjugate to the focal plane of the microscope objective.

Claim 39 (withdrawn): The microscope objective as recited in claim 38 wherein the plane is a Fourier plane of the microscope objective.

Claim 40 (withdrawn): The microscope objective as recited in claim 35 wherein the outcoupling end is disposed at a lateral distance from an optical axis of the microscope objective.

Claim 41 (withdrawn): The microscope objective as recited in claim 31 wherein the optical fiber has an incoupling end configured to have illumination light coupled thereto.

Claim 42 (withdrawn): The microscope objective as recited in claim 41 wherein the optical fiber has an outcoupling end disposed in a portion of the microscope objective so that illumination light exiting from the outcoupling end passes through an optical edge region of the microscope objective.

Claim 43 (withdrawn): The microscope objective as recited in claim 31 wherein the objective is configured to have illumination light, after passing through the objective, exit therefrom at an adjustable angle relative to an optical axis.

Claim 44 (withdrawn): The microscope objective as recited in claim 43 wherein the optical fiber has an outcoupling end disposed in a portion of the microscope objective, and wherein a position of the outcoupling end in a microscope is changeable so as to set the adjustable angle.

Claim 45 (currently amended): A microscope comprising a microscope objective, the microscope objective including:

at least one optical fiber having:

an incoupling end; and

an outcoupling end;

wherein the incoupling end is configured to receive illumination light and convey the illumination light to the outcoupling end, and the outcoupling end is mechanically attached to a portion of the microscope objective and disposed in a Fourier plane that is conjugate to a focal plane of the microscope objective.

Claim 46 (withdrawn): The microscope as recited in claim 45 wherein the at least one optical fiber is configured to couple illumination light directly into the microscope objective through the at least one optical fiber.

Claim 47 (withdrawn): The microscope as recited in claim 45 wherein at least part of the at least one optical fiber is mechanically attached to a portion of the microscope objective.

Claim 48 (withdrawn): The microscope as recited in claim 45 wherein the at least one optical fiber has an outcoupling end disposed in a portion of the microscope objective.

Claim 49 (withdrawn): The microscope as recited in claim 48 wherein the outcoupling end is disposed in a plane that is conjugate to a focal plane of the microscope objective.

Claim 50 (withdrawn): The microscope as recited in claim 49 wherein the plane is a Fourier plane of the microscope objective.

Claim 51 (withdrawn): The microscope as recited in claim 49 wherein the plane is a plane, closest to a front lens of the microscope objective, that is conjugate to the focal plane of the microscope objective.

Claim 52 (withdrawn): The microscope as recited in claim 51 wherein the plane is a Fourier

plane of the microscope objective.

Claim 53 (withdrawn): The microscope as recited in claim 48 wherein the outcoupling end is disposed at a lateral distance from an optical axis of the microscope objective.

Claim 54 (withdrawn): The microscope as recited in claim 45 wherein the at least one optical fiber has an incoupling end configured to have illumination light coupled thereinto.

Claim 55 (withdrawn): The microscope as recited in claim 54 wherein the at least one optical fiber has an outcoupling end disposed in a portion of the microscope objective so that illumination light exiting from the outcoupling end passes through an optical edge region of the microscope objective.

Claim 56 (withdrawn): The microscope as recited in claim 45 wherein the microscope objective is configured to have illumination light, after passing through the objective, exit therefrom at an adjustable angle relative to an optical axis.

Claim 57 (withdrawn): The microscope as recited in claim 56 wherein the at least one optical fiber has an outcoupling end disposed in a portion of the microscope objective, and wherein a position of the outcoupling end in the microscope is changeable so as to set the adjustable angle.

Claim 58 (withdrawn): The microscope as recited in claim 45 wherein the at least one optical fiber has an outcoupling end disposed in a portion of the microscope objective, and further comprising at least one illumination light source configured to emit illumination light coupleable into the incoupling end of the at least one optical fiber.

Claim 59 (withdrawn): The microscope as recited in claim 54 wherein the incoupling end is disposed in a plane corresponding to a focal plane of the microscope objective.

Claim 60 (withdrawn): The microscope as recited in claim 54 wherein the incoupling

end is disposed in an intermediate image plane of the microscope.

Claim 61 (withdrawn): The microscope as recited in claim 54 further comprising a beam deflector configured to direct the illumination light onto the incoupling end.

Claim 62 (currently amended): The microscope as recited in claim 45 wherein the at least one optical fiber is configured to convey the illumination light so as to provide TIRF illumination.

Claim 63 (withdrawn): The microscope as recited in claim 45 further comprising an illumination light source configured to emit illumination light coupleable into the at least one optical fiber for TIRF illumination and configured to emit the illumination light so as to bypass the optical fiber for direct specimen illumination.

Claim 64 (withdrawn): The microscope as recited in claim 45 further comprising a scanning device configured to support scanning microscopy.

Claim 65 (withdrawn): The microscope as recited in claim 45 further comprising a scanning device configured to support confocal scanning microscopy.